

**ATTENTION:**

Read this document and the documents listed in the Additional Resources section about installation, configuration and operation of this equipment before you install, configure, operate or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

注意:

在安装、配置、操作和维护本产品前，请阅读本文档以及“其他资源”部分列出的有关设备安装、配置和操作的相应文档。除了所有适用规范、法律和标准的相关要求之外，用户还必须熟悉安装和接线说明。

安装、调整、投运、使用、组装、拆卸和维护等各项操作必须由经过适当训练的专业人员按照适用的操作规范实施。

如果未按照制造商指定的方式使用该设备，则可能会损害设备提供的保护。

ATENCIÓN:

Antes de instalar, configurar, poner en funcionamiento o realizar el mantenimiento de este producto, lea este documento y los documentos listados en la sección Recursos adicionales acerca de la instalación, configuración y operación de este equipo. Los usuarios deben familiarizarse con las instrucciones de instalación y cableado y con los requisitos de todos los códigos, leyes y estándares vigentes.

El personal debidamente capacitado debe realizar las actividades relacionadas a la instalación, ajustes, puesta en servicio, uso, ensamble, desensamble y mantenimiento de conformidad con el código de práctica aplicable.

Si este equipo se usa de una manera no especificada por el fabricante, la protección provista por el equipo puede resultar afectada.

ATENÇÃO:

Leia este e os demais documentos sobre instalação, configuração e operação do equipamento que estão na seção Recursos adicionais antes de instalar, configurar, operar ou manter este produto. Os usuários devem se familiarizar com as instruções de instalação e fiação além das especificações para todos os códigos, leis e normas aplicáveis.

É necessário que as atividades, incluindo instalação, ajustes, colocação em serviço, utilização, montagem, desmontagem e manutenção sejam realizadas por pessoal qualificado e especializado, de acordo com o código de prática aplicável.

Caso este equipamento seja utilizado de maneira não estabelecida pelo fabricante, a proteção fornecida pelo equipamento pode ficar prejudicada.

ВНИМАНИЕ:

Перед тем как устанавливать, настраивать, эксплуатировать или обслуживать данное оборудование, прочитайте этот документ и документы, перечисленные в разделе «Дополнительные ресурсы». В этих документах изложены сведения об установке, настройке и эксплуатации данного оборудования. Пользователи обязаны ознакомиться с инструкциями по установке и прокладке соединений, а также с требованиями всех применимых норм, законов и стандартов.

Все действия, включая установку, наладку, ввод в эксплуатацию, использование, сборку, разборку и техническое обслуживание, должны выполняться обученным персоналом в соответствии с применимыми нормами и правилами.

Если оборудование используется не предусмотренным производителем образом, защита оборудования может быть нарушена.

注意:

本製品を設置、構成、稼働または保守する前に、本書および本機器の設置、設定、操作についての参考資料の該当箇所に記載されている文書に目を通してください。ユーザは、すべての該当する条例、法律、規格の要件に加えて、設置および配線の手順に習熟している必要があります。

設置調整、運転の開始、使用、組立て、解体、保守を含む諸作業は、該当する実施規則に従って訓練を受けた適切な作業員が実行する必要があります。

本機器が製造メーカーにより指定されていない方法で使用されている場合、機器により提供されている保護が損なわれる恐れがあります。

ACHTUNG:

Lesen Sie dieses Dokument und die im Abschnitt „Literaturverweise“ genannten Dokumente zur Installation, Konfiguration und Bedienung dieser Ausrüstung sorgfältig durch, bevor Sie dieses Produkt installieren, konfigurieren, bedienen oder instandsetzen. Benutzer müssen sich mit den Anweisungen zur Installation und Verdrahtung vertraut machen und müssen die Anforderungen aller geltenden Vorschriften, Gesetze und Normen kennen.

Aktivitäten wie Installation, Einstellung, Inbetriebnahme, Verwendung, Montage, Demontage und Instandsetzung müssen durch ausreichend geschultes Personal in Übereinstimmung mit den geltenden Durchführungsvorschriften ausgeführt werden.

Wenn diese Ausrüstung in einer Weise verwendet wird, die nicht vom Hersteller angegeben wurde, kann der von der Ausrüstung bereitgestellte Schutz beeinträchtigt sein.

ATTENTION :

Lisez ce document et les documents listés dans la section Ressources complémentaires relatifs à l'installation, la configuration et le fonctionnement de cet équipement avant d'installer, configurer, utiliser ou entretenir ce produit. Les utilisateurs doivent se familiariser avec les instructions d'installation et de câblage en plus des exigences relatives aux codes, lois et normes en vigueur.

Les activités relatives à l'installation, le réglage, la mise en service, l'utilisation, l'assemblage, le démontage et l'entretien doivent être réalisées par des personnes formées selon le code de pratique en vigueur.

Si cet équipement est utilisé d'une façon qui n'a pas été définie par le fabricant, la protection fournie par l'équipement peut être compromise.

주의:

본 제품 설치, 설정, 작동 또는 유지 보수하기 전에 본 문서를 포함하여 설치, 설정 및 작동에 관한 참고 자료 섹션의 문서들을 반드시 읽고 숙지하십시오. 사용자는 모든 관련 규정, 법규 및 표준에서 요구하는 사항에 대해 반드시 설치 및 배선 지침을 숙지해야 합니다.

설치, 조정, 가동, 사용, 조립, 분해, 유지보수 등 모든 작업은 관련 규정에 따라 적절한 교육을 받은 사용자를 통해서만 수행해야 합니다.

본 장비를 제조사가 명시하지 않은 방법으로 사용하면 장비의 보호 기능이 손상될 수 있습니다.

ATTENZIONE

Prima di installare, configurare ed utilizzare il prodotto, o effettuare interventi di manutenzione su di esso, leggere il presente documento ed i documenti elencati nella sezione "Altre risorse", riguardanti l'installazione, la configurazione ed il funzionamento dell'apparecchiatura. Gli utenti devono leggere e comprendere le istruzioni di installazione e cablaggio, oltre ai requisiti previsti dalle leggi, codici e standard applicabili.

Le attività come installazione, regolazioni, utilizzo, assemblaggio e manutenzione devono essere svolte da personale adeguatamente addestrato, nel rispetto delle procedure previste.

Qualora l'apparecchio venga utilizzato con modalità diverse da quanto previsto dal produttore, la sua funzione di protezione potrebbe venire compromessa.

**DIKKAT:**

Bu ürünün kurulumu, yapılandırılması, işletilmesi veya bakımı öncesinde bu dokümanı ve bu ekipmanın kurulumu, yapılandırılması ve işletimi ile ilgili ilave Kaynaklar bölümünde yer listelenmiş dokümanları okuyun. Kullanıcılar yürürlükteki tüm yönetmelikler, yasalar ve standartların gereksinimlerine ek olarak kurulum ve kablolama talimatlarını da öğrenmek zorundadır.

Kurulum, ayarlama, hizmete alma, kullanma, parçaları birleştirme, parçaları sökme ve bakım gibi aktiviteler sadece uygun eğitimleri almış kişiler tarafından yürürlükteki uygulama yönetmeliklerine uygun şekilde yapılabilir.

Bu ekipman üretici tarafından belirlenmiş amacın dışında kullanılırsa, ekipman tarafından sağlanan koruma bozulabilir.

注意事項:

在安裝、設定、操作或維護本產品前，請先閱讀此文件以及列於「其他資源」章節中有關安裝、設定與操作此設備的文件。使用者必須熟悉安裝和配線指示，並符合所有法規、法律和標準要求。

包括安裝、調整、交付使用、使用、組裝、拆卸和維護等動作都必須交由已經過適當訓練的人員進行，以符合適用的實作法規。

如果將設備用於非製造商指定的用途時，可能會造成設備所提供的保護功能受損。

POZOR:

Než začnete instalovat, konfigurovat či provozovat tento výrobek nebo provádět jeho údržbu, přečtěte si tento dokument a dokumenty uvedené v části Dodatečné zdroje ohledně instalace, konfigurace a provozu tohoto zařízení. Uživatelé se musejí vedle požadavků všech relevantních vyhlášek, zákonů a norem nutně seznámit také s pokyny pro instalaci a elektrické zapojení.

Činnosti zahrnující instalaci, nastavení, uvedení do provozu, užívání, montáž, demontáž a údržbu musí vykonávat vhodně proškolený personál v souladu s příslušnými prováděcími předpisy.

Pokud se toto zařízení používá způsobem neodpovídajícím specifikaci výrobce, může být narušena ochrana, kterou toto zařízení poskytuje.

UWAGA:

Przed instalacją, konfiguracją, użytkowaniem lub konserwacją tego produktu należy przeczytać niniejszy dokument oraz wszystkie dokumenty wymienione w sekcji Dodatkowe źródła omawiające instalację, konfigurację i procedury użytkowania tego urządzenia. Użytkownicy mają obowiązek zapoznać się z instrukcjami dotyczącymi instalacji oraz oprzewodowania, jak również z obowiązującymi kodeksami, prawem i normami.

Działania obejmujące instalację, regulację, przekazanie do użytkowania, użytkowanie, montaż, demontaż oraz konserwację muszą być wykonywane przez odpowiednio przeszkolony personel zgodnie z obowiązującym kodeksem postępowania.

Jeśli urządzenie jest używane w sposób inny niż określony przez producenta, zabezpieczenie zapewniane przez urządzenie może zostać ograniczone.

OBS!

Läs detta dokument samt dokumentet, som står listat i avsnittet Övriga resurser, om installation, konfigurering och drift av denna utrustning innan du installerar, konfigurerar eller börjar använda eller utföra underhållsarbete på produkten. Användare måste bekanta sig med instruktioner för installation och kabeldragning, förutom krav enligt gällande koder, lagar och standarder.

Åtgärder som installation, justering, service, användning, montering, demontering och underhållsarbete måste utföras av personal med lämplig utbildning enligt lämpligt bruk.

Om denna utrustning används på ett sätt som inte anges av tillverkaren kan det hända att utrustningens skyddsanordningar försätts ur funktion.

LET OP:

Lees dit document en de documenten die genoemd worden in de paragraaf Aanvullende informatie over de installatie, configuratie en bediening van deze apparatuur voordat u dit product installeert, configureert, bedient of onderhoudt. Gebruikers moeten zich vertrouwd maken met de installatie en de bedringsinstructies, naast de vereisten van alle toepasselijke regels, wetten en normen.

Activiteiten zoals het installeren, afstellen, in gebruik stellen, gebruiken, monteren, demonteren en het uitvoeren van onderhoud mogen uitsluitend worden uitgevoerd door hiervoor opgeleid personeel en in overeenstemming met de geldende praktijkregels.

Indien de apparatuur wordt gebruikt op een wijze die niet is gespecificeerd door de fabrikant, dan bestaat het gevaar dat de beveiliging van de apparatuur niet goed werkt.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource		Description	
English	The installation instructions are available in multiple languages at http://rockwellautomation.com/literature . Select publication language and type "20B-IN019" in the search field.	Español	Puede encontrar las instrucciones de instalación en varios idiomas en http://rockwellautomation.com/literature . Seleccione el idioma de publicación y escriba "20B-IN019" en el campo de búsqueda.
Deutsch	Die Installationsanweisungen kann in mehreren Sprachen unter http://rockwellautomation.com/literature gelesen werden. Bitte Ihre Sprache anwählen und "20B-IN019" im Suchfeld eintippen.	Português	As instruções de instalação está disponível em várias línguas em http://rockwellautomation.com/literature . Selecione a língua de publicação e entre com "20B-IN019" no espaço de busca.
Français	Les instructions d'installation sont disponibles dans différentes langues à l'adresse suivante: http://rockwellautomation.com/literature . Sélectionner la langue puis taper << 20B-IN019 >> dans le champ de recherche.	中文 (简体)	从以下网页可以获得安装说明多种语言的版本： http://rockwellautomation.com/literature 。 请选择出版物的语言，并在搜索栏输入“20B-IN019 印
Italiano	Le istruzioni per l'installazione disponibile in varie lingue sul sito http://rockwellautomation.com/literature . Selezionare la lingua desiderata e digitare "20B-IN019" nel campo di ricerca.		
PowerFlex 700 Vector Control User Manual (v4.001 & up), publication 20B-UM002		Provides the basic information needed to install, start-up, and troubleshoot the PowerFlex 700 adjustable frequency AC drive.	
PowerFlex 700 Adjustable Frequency AC Drive Technical Data, publication 20B-TD001		Provides technical data regarding the PowerFlex 700 adjustable frequency AC drives for a variety of industrial applications.	
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001		Provides basic information needed to properly wire and ground PWM AC drives.	
Industry Installation Guidelines for Pulse Width Modulated (PWM) AC Drives Application Technique, publication DRIVES-AT003		Provides basic information for different enclosure systems, and power and grounding considerations needed to properly install a PWM AC drive.	
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1		Provides general guidelines for installing a Rockwell Automation industrial system.	
Product Certifications website, http://www.rockwellautomation.com/products/certification		Provides declarations of conformity, certificates, and other certification details.	

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.



ATTENTION: Only qualified personnel familiar with adjustable frequency AC drives and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.



ATTENTION: An incorrectly applied or installed drive can result in component damage or a reduction in product life. Wiring or application errors such as under sizing the motor, incorrect or inadequate AC supply, or excessive surrounding air temperatures may result in malfunction of the system.



ATTENTION: Drive **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the drive is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.

Operating Temperatures

PowerFlex 700 drives (frames 0...6) are designed to operate at 0...40 °C (32...104 °F) ambient. To operate the drive in installations between 41...50 °C (106...122 °F), see the information below and refer to pages 4 through 8 for exceptions.

Acceptable Surrounding Air Temperature & Required Actions

Enclosure Rating	Temperature Range	Drive
IP20, NEMA/UL Type 1 (with Top Label) ⁽¹⁾	0...40 °C (32...104 °F)	Frames 0...4, All Ratings
	0...50 °C (32...122 °F)	Frames 5...6, Most Ratings ⁽²⁾
IP20, NEMA/UL Type Open (Top Label Removed) ⁽¹⁾	0...50 °C (32...122 °F)	Most Ratings ⁽²⁾
	0...45 °C (32...113 °F)	20BC072 Only
IP00, NEMA/UL Type Open (Top Label & Vent Plate Removed)	0...50 °C (32...122 °F)	20BC072 Only ⁽³⁾
Flange Mount		
	Front - IP00, NEMA/UL Type Open	Frames 5...6
	Back/Heat Sink - IP54, NEMA/UL Type 12	
	0...55 °C (32...131 °F) Front (Inside End.)	
	0...40 °C (32...104 °F) Back (External)	
Stand-alone/Wall Mount - IP54, NEMA/UL 12	0...40 °C (32...104 °F)	Frames 5...6

- (1) Removing the adhesive top label from the drive changes the NEMA/UL enclosure rating from Type 1 to Open. Frames 5 and 6 do not have a top label.
 (2) Refer to pages 4 through 8 for exceptions.
 (3) To remove vent plate (refer to User Manual for location), lift top edge of plate from the chassis. Rotate the plate out from the back plate.

Drive Weights

Frame	Weight ⁽¹⁾ kg (lb)	Frame	Weight ⁽¹⁾ kg (lb)	NEMA/UL Type 12 (400...690V drives only)	Weight ⁽¹⁾ kg (lb)
0	5.22 (11.5)	4	24.49 (54.0)	Frame 5 NEMA/UL Type 12 Standalone	102.51 (226.0)
1	7.03 (15.5)	5	37.19 (82.0)	Frame 5 NEMA/UL Type 12 Flange Mount	61.69 (136.0)
2	12.52 (27.6)	6	71.44 (157.5)	Frame 6 NEMA/UL Type 12 Standalone	176.90 (390)
3	18.55 (40.9)			Frame 6 NEMA/UL Type 12 Flange Mount	99.79 (220.0)

(1) Weights include HIM and Standard I/O.

Leakage Current

- PowerFlex 700 drives produce leakage current in the protective earthing conductor which exceeds 3.5 mA AC and/or 10 mA DC. The minimum size of the protective earthing (grounding) conductor used in the application must comply with local safety regulations for high protective earthing conductor current equipment.
- PowerFlex 700 drives produce DC current in the protective earthing conductor and may reduce the ability of a residual current device (RCD) or residual current monitor (RCM) of type A or AC to provide protection for the drive and other equipment in the installation.

Motor Overload Protection - PowerFlex 700 Drives with Standard Control

PowerFlex 700 drives with standard control, identified by an N, A, or B in position 15 of the catalog number, only provide Class 10 motor overload protection according to NEC article 430. They do not provide speed sensitive overload protection, thermal memory retention and motor over-temperature sensing according to NEC article 430.126 (A) (2). If such protection is needed in the end-use product, it must be provided by additional means.

Motor Overload Protection - PowerFlex 700 Drives with Vector Control

PowerFlex 700 drives with vector control, identified by a C or D in position 15 of the catalog number, provide class 10 motor overload protection according to NEC article 430 and motor over-temperature protection according to NEC article 430.126 (A) (2). UL 508C File E59272.

Short Circuit Current Rating

Maximum Short Circuit Rating:	200,000 Amps symmetrical.
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Branch Circuit Short Circuit Protection

Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electric Code (NEC) and any additional local codes, or the equivalent. The tables on the following pages provide drive ratings (including continuous, 1 minute and 3 second) and recommended AC line input fuse and circuit breaker information. Both types of short circuit protection are acceptable for UL and IEC requirements. Sizes listed are the recommended sizes based on 40 °C (104 °F) and the U.S. N.E.C. Other country, state or local codes can require different ratings.

Fuse and Circuit Breaker Ratings

The tables on the following pages provide recommended AC line input fuse and circuit breaker information. See Fusing and Circuit Breakers below for UL and IEC requirements. Sizes listed are the recommended sizes based on 40 °C (104 °F) and the U.S. NEC. Other country, state, or local codes can require different ratings. Tables with DC link fuse recommendations for DC input drives are also provided.

Fusing

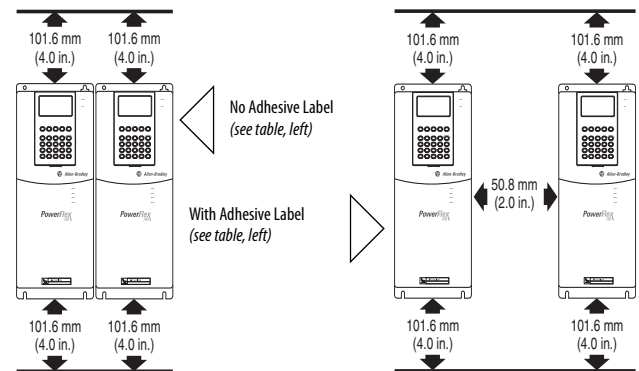
The recommended fuse types are listed below. If available current ratings do not match those listed in the tables provided, choose the next higher fuse rating.

- IEC – BS88 (British Standard) Parts 1 & 2, EN60269-1, Parts 1 & 2¹, type gG or equivalent should be used.
- UL – UL Class CC, T, RK1 or J should be used.

¹ Typical designations include, but may not be limited to the following: Parts 1 & 2: AC, AD, BC, BD, CD, DD, ED, EFS, EF, FF, FG, GF, GG, GH.

Minimum Mounting Clearances

Specified vertical clearance requirements are intended to be from the drive to the closest object that can restrict airflow through the drive heat sink and chassis. The drive must be mounted in a vertical orientation as shown, and must make full contact with the mounting surface. Do not use standoffs or spacers. In addition, inlet air temperature must not exceed the product specification.



Circuit Breakers

The "non-fuse" listings in the following tables include inverse time circuit breakers, instantaneous trip circuit breakers (motor circuit protectors) and 140M self-protected combination motor controllers. If one of these is chosen as the desired protection method, the following requirements apply:

- IEC – Both types of circuit breakers and 140M self-protected combination motor controllers are acceptable for IEC installations.
- UL – Only inverse time circuit breakers and the specified 140M self-protected combination motor controllers are acceptable for UL installations.

Single-phase AC Input Ratings

208/240 Volt Single-Phase AC Input Ratings

240V Single-Phase AC Input					208V Single-Phase AC Input					Temp. °C
Drive Catalog Number	Frame	Hp Rating	Input Amps	Three-Phase Output	Drive Catalog Number	Frame	Hp Rating	Input Amps	Three-Phase Output	
				V AC Amps					V AC Amps	
20BB2P2	0	0.25	1.5	0-230 1.1	20BB2P2	0	0.25	1.7	0-200 1.3	25
20BB4P2	0	0.5	2.8	0-230 2.1	20BB4P2	0	0.5	3.2	0-200 2.4	25
20BB6P8	1	1	5.1	0-230 3.4	20BB6P8	1	1	5.9	0-200 3.9	25
20BB9P6	1	1.5	7.2	0-230 4.8	20BB9P6	1	1.5	8.3	0-200 5.5	25
20BB015	1	2.5	11.9	0-230 7.7	20BB015	1	2.5	13.6	0-200 8.8	25
20BB022	1	3.75	17.3	0-230 11	20BB022	1	3.75	19.9	0-200 12.7	25
20BB028	2	5	22.2	0-230 14	20BB028	2	5	25.7	0-200 16.1	25
20BB042	3	7.5	33.4	0-230 21	20BB042	3	7.5	38.5	0-200 24.2	25
20BB052	3	10	41.3	0-230 26	20BB052	3	10	44.6	0-200 28	25
20BB070	4	12.5	55.6	0-230 35	20BB070	4	12.5	62.3	0-200 39.1	25
20BB080	4	15	63.6	0-230 40	20BB080	4	15	73.3	0-200 46	25
20BB104	5	20	84.6	0-230 52	20BB104	5	20	97.9	0-200 60	25
20BB130	5	25	105.7	0-230 65	20BB130	5	25	106.1	0-200 65	25
20BB154	6	30	125.2	0-230 77	20BB154	6	30	144.4	0-200 88.5	25
20BB192	6	37.5	156.1	0-230 96	20BB192	6	37.5	180.3	0-200 110.5	25
20BB260	6	50	211.4	0-230 130	20BB260	6	50	212.1	0-200 130	25

380...480 Volt Single-Phase AC Input Ratings

480V Single-Phase AC Input					380...400V Single-Phase AC Input					Temp. °C
Drive Catalog Number	Frame	Hp Rating	Input Amps	Three-Phase Output	Drive Catalog Number	Frame	kW Rating	Input Amps	Three-Phase Output	
				V AC Amps					V AC Amps	
20BD1P1	0	0.25	0.7	0-460 0.6	20BC1P3	0	0.2	1	0-400 0.7	25
20BD2P1	0	0.5	1.4	0-460 1.1	20BC2P1	0	0.4	1.6	0-400 1.1	25
20BD3P4	0	1	2.3	0-460 1.7	20BC3P5	0	0.75	2.7	0-400 1.8	25
20BD5P0	0	1.5	3.4	0-460 2.5	20BC5P0	0	1.1	3.9	0-400 2.5	25
20BD8P0	0	2.5	6	0-460 4	20BC8P7	0	2	6.9	0-400 4.4	25
20BD011	0	3.75	8.2	0-460 5.5	20BC011	0	2.75	9.3	0-400 5.8	25
20BD014	1	5	10.9	0-460 7	20BC015	1	3.75	12.5	0-400 7.7	25
20BD022	1	7.5	17.3	0-460 11	20BC022	1	5.5	17.8	0-400 11	25
20BD027	2	10	21.4	0-460 13.5	20BC030	2	7.5	24.6	0-400 15	25
20BD034	2	12.5	27	0-460 17	20BC037	2	9.25	30.3	0-400 18.5	25
20BD040	3	15	31.8	0-460 20	20BC043	3	11	35.2	0-400 21.5	25
20BD052	3	20	41.3	0-460 26	20BC056	3	15	45.9	0-400 28	25
20BD065	3	25	51.6	0-460 32.5	20BC072	3	18.5	59.7	0-400 36	25
20BD077	4	30	62.6	0-460 38.5	20BC085	4	22.5	70.5	0-400 42.5	25
20BD096	5	37.5	78.1	0-460 48	20BC105	5	27.5	87	0-400 52.5	25
20BD125	5	50	101.6	0-460 62.5	20BC125	5	27.5	103.6	0-400 62.5	25
—	—	—	—	—	20BC140	5	37.5	117.4	0-400 70	25
20BD156	6	62.5	126.8	0-460 78	20BC170	6	45	142.6	0-400 85	25
20BD180	6	75	146.4	0-460 90	20BC205	6	55	171.9	0-400 102.5	25
20BD248	6	100	201.6	0-460 124	20BC260	6	66	220.6	0-400 130	25

600...690 Volt Single-Phase AC Input Rating

600V Single-Phase AC Input					690V Single-Phase AC Input					Temp. °C
Drive Catalog Number	Frame	Hp Rating	Input Amps	Three-Phase Output	Drive Catalog Number	Frame	kW Rating	Input Amps	Three-Phase Output	
				V AC Amps					V AC Amps	
20BE1P7	0	0.5	1.1	0-575 0.9	—	—	—	—	—	25
20BE2P7	0	1	1.8	0-575 1.4	—	—	—	—	—	25
20BE3P9	0	1.5	2.6	0-575 2	—	—	—	—	—	25
20BE6P1	0	2.5	4.6	0-575 3.1	—	—	—	—	—	25
20BE9P0	0	3.75	6.7	0-575 4.5	—	—	—	—	—	25
20BE011	1	5	8.5	0-575 5.5	—	—	—	—	—	25

600...690 Volt Single-Phase AC Input Rating (continued)

600V Single-Phase AC Input					690V Single-Phase AC Input					Temp. °C
Drive Catalog Number	Frame	Hp Rating	Input Amps	Three-Phase Output	Drive Catalog Number	Frame	kW Rating	Input Amps	Three-Phase Output	
				V AC Amps					V AC Amps	
20BE017	1	7.5	13.3	0-575 8.5	—	—	—	—	—	25
20BE022	2	10	17.5	0-575 11	—	—	—	—	—	25
20BE027	2	12.5	21.4	0-575 13.5	—	—	—	—	—	25
20BE032	3	15	25.4	0-575 16	—	—	—	—	—	25
20BE041	3	20	32.6	0-575 20.5	—	—	—	—	—	25
20BE052	3	25	41.3	0-575 26	20BF052	5	22.5	43.1	0-690 26	25
20BE062	4	30	50.4	0-575 31	20BF060	5	27.5	49.9	0-690 30	25
20BE077	5	37.5	62.6	0-575 38.5	20BF082	5	37.5	68.4	0-690 41	25
20BE099	5	50	80.5	0-575 49.5	20BF098	5	45	82	0-690 49	25
20BE125	6	62.5	101.6	0-575 62.5	20BF119	6	55	100	0-690 59.5	25
20BE144	6	75	117.1	0-575 72	20BF142	6	66	120.2	0-690 71	25

DC Input Protection Devices

325 Volt DC Input Protection Devices (See [page 5](#) for Notes)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. (1)	DC Input Ratings	Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	Cont.	1 Min.	3 Sec.		
20BB2P2	0	0.5	0.33	4	50	2	2.2	2.4	3.3	5	JKS-5
20BB4P2	0	1	0.75	4	50	3.8	4.2	4.8	6.4	10	JKS-10
20BB6P8	1	2	1.5	4	50	6.9	6.8	9	12	15	HSJ15
20BB9P6	1	3	2	4	50	9.7	9.6	10.6	14.4	20	HSJ20
20BB015	1	5	3	4	50	16	15.3	16.8	23	30	HSJ30
20BB022	1	7.5	5	4	50	23.3	22	24.2	33	45	HSJ45
20BB028	2	10	7.5	4	50	30	28	33	44	60	HSJ60
20BB042	3	15	10	4	50	45	42	46.2	63	90	HSJ90
20BB052	3	20	15	4	50	55	52	63	80	100	HSJ100
20BB070	4	25	20	4	50	75.3	70	78	105	150	HSJ150
20BB080	4	30	25	4	50	86.8	80	105	140	175	HSJ175
20BN104 ⁽³⁾	5	40	—	4	50	114.1	104	115	175	200	HSJ200
		—	30	4	50	85.8	80	120	160	200	HSJ200
20BN130 ⁽³⁾	5	50	—	4	50	142.6	130	143	175	200	HSJ200
		—	40	4	50	114.1	104	156	175	200	HSJ200
20BN154 ⁽³⁾	6	60	—	4	50	169	154	169	231	300	HSJ300
		—	50	4	50	142.6	130	195	260	300	HSJ300
20BN192 ⁽³⁾	6	75	—	4	50	210.6	192	211	288	350	HSJ350
		—	60	4	50	169	154	231	308	350	HSJ350
20BN260 ⁽³⁾	6	100	—	2	45	285.3	260	286	390	400	HSJ400
		—	75	2	50	210.6	205	305	410	400	HSJ400

540 Volt DC Input Protection Devices (See [page 5](#) for Notes)

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp. (1)	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BC1P3	0	0.37	0.25	4	50	1.3	—	1.3	1.4	1.9	3	JKS-3
20BC2P1	0	0.75	0.55	4	50	2.1	—	2.1	2.4	3.2	6	JKS-6
20BC3P5	0	1.5	0.75	4	50	3.7	—	3.5	4.5	6	8	JKS-8
20BC5P0	0	2.2	1.5	4	50	5.3	—	5	5.5	7.5	10	JKS-10
20BC8P7	0	4	3	4	50	9.3	—	8.7	9.9	13.2	15	HSJ15
20BC011	0	5.5	4	4	50	12.6	—	11.5	13	17.4	20	HSJ20
20BC015	1	7.5	5.5	4	50	16.8	—	15.4	17.2	23.1	25	HSJ25
20BC022	1	11	7.5	4	50	24	—	22	24.2	33	40	HSJ40
20BC030	2	15	11	4	50	33.2	—	30	33	45	50	HSJ50
20BC037	2	18.5	15	4	50	40.9	—	37	45	60	70	HSJ70
20BC043	3	22	18.5	4	50	47.5	—	43	56	74	90	HSJ90
20BC056	3	30	22	4	50	61.9	—	56	64	86	100	HSJ100
20BC072	3	37	30	4	50 ⁽⁷⁾	80.5	—	72	84	112	125	HSJ125
20BC085 ⁽³⁾⁽⁵⁾	4	45	—	4	45	95.1	—	85	94	128	150	HSJ150
	—	37	4	45	80.5	—	72	108	144	175	HSJ175	
20BH105 ⁽³⁾⁽⁵⁾	5	55	—	4	50 ⁽⁴⁾	120.2	—	105	116	158	175	HSJ175
	—	45	4	50 ⁽⁴⁾	95.1	—	85	128	170	200	HSJ200	

540 Volt DC Input Protection Devices (See [page 5](#) for Notes) (continued)

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp. (1)	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BH140 ⁽³⁾⁽⁵⁾	5	75	—	4	40 ⁽⁴⁾	159	—	140	154	190	225	HSJ225
		—	55	4	40 ⁽⁴⁾	120.2	—	105	158	190	225	HSJ225
20BH170 ⁽³⁾⁽⁵⁾	6	90	—	4	50 ⁽⁴⁾	192.3	—	170	187	255	300	HSJ300
		—	75	4	50 ⁽⁴⁾	159	—	140	210	280	300	HSJ300
20BH205 ⁽³⁾⁽⁵⁾	6	110	—	4	40 ⁽⁴⁾	226	—	205	220	289	350	HSJ350
		—	90	4	40 ⁽⁴⁾	192.3	—	170	255	313	350	HSJ350
20BH260 ⁽³⁾⁽⁵⁾	6	132	—	2	45 ⁽⁴⁾	298	—	260	286	390	500	HSJ500
		—	110	2	50 ⁽⁴⁾	226	—	205	305	410	500	HSJ500

650 Volt DC Input Protection Devices (See [page 5](#) for Notes)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. (1)	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BD1P1	0	0.5	0.33	4	50	1.0	—	1.1	1.2	1.6	3	JKS-3
20BD2P1	0	1	0.75	4	50	1.9	—	2.1	2.4	3.2	6	JKS-6
20BD3P4	0	2	1.5	4	50	3.0	—	3.4	4.5	6.0	6	JKS-6
20BD5P0	0	3	2	4	50	4.5	—	5.0	5.5	7.5	10	JKS-10
20BD8P0	0	5	3	4	50	8.1	—	8.0	8.8	12	15	HSJ15
20BD011	0	7.5	5	4	50	11.1	—	11	12.1	16.5	20	HSJ20
20BD014	1	10	7.5	4	50	14.7	—	14	16.5	22	30	HSJ30
20BD022	1	15	10	4	50	23.3	—	22	24.2	33	40	HSJ40
20BD027	2	20	15	4	50	28.9	—	27	33	44	50	HSJ50
20BD034	2	25	20	4	50	36.4	—	34	40.5	54	60	HSJ60
20BD040	3	30	25	4	50	42.9	—	40	51	68	80	HSJ80
20BD052	3	40	30	4	50	55.7	—	52	60	80	90	HSJ90
20BD065	3	50	40	4	50	69.7	—	65	78	104	100	HSJ100
20BD077 ⁽³⁾	4	60	—	4	50	84.5	—	77	85	116	150	HSJ150
		—	50	4	50	69.7	—	65	98	130	150	HSJ150
20BR096 ⁽³⁾⁽⁶⁾	5	75	—	4	50 ⁽⁴⁾	105.3	—	96	106	144	175	HSJ175
		—	60	4	50 ⁽⁴⁾	84.5	—	77	116	154	175	HSJ175
20BR125 ⁽³⁾⁽⁶⁾	5	100	—	4	50 ⁽⁴⁾	137.1	—	125	138	163	200	HSJ200
		—	75	4	50 ⁽⁴⁾	105.3	—	96	144	168	200	HSJ200
20BR156 ⁽³⁾⁽⁶⁾	6	125	—	4	50 ⁽⁴⁾	171.2	—	156	172	234	300	HSJ300
		—	100	4	50 ⁽⁴⁾	137.1	—	125	188	250	300	HSJ300
20BR180 ⁽³⁾⁽⁶⁾	6	150	—	4	50 ⁽⁴⁾	204	—	180	198	270	400	HSJ400
		—	125	4	50 ⁽⁴⁾	171.2	—	156	234	312	400	HSJ400

650 Volt DC Input Protection Devices (See [page 5](#) for Notes) (continued)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. (1)	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BR248 ⁽³⁾⁽⁶⁾	6	200	—	2	45 ⁽⁴⁾	272	—	248	273	372	400	HSJ400
		—	150	2	50 ⁽⁴⁾	204	—	180	270	360	400	HSJ400

Notes:

810 Volt DC Input Protection Devices (See [page 5](#) for Notes)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. (1)	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BE1P7	0	1	0.75	4	50	1.5	—	1.7	2	2.6	3	JKS-3
20BE2P7	0	2	1.5	4	50	2.4	—	2.7	3.6	4.8	6	JKS-6
20BE3P9	0	3	2	4	50	3.5	—	3.9	4.3	5.9	6	JKS-6
20BE6P1	0	5	3	4	50	6.2	—	6.1	6.7	9.2	10	JKS-10
20BE9P0	0	7.5	5	4	50	9.1	—	9	9.9	13.5	15	HSJ15
20BE011	0	10	7.5	4	50	11.5	—	11	13.5	18	20	HSJ20
20BE017	1	15	10	4	50	18	—	17	18.7	25.5	30	HSJ30
20BE022	2	20	15	4	50	23.6	—	22	25.5	34	40	HSJ40
20BE027	2	25	20	4	50	29	—	27	33	44	50	HSJ50
20BE032	3	30	25	4	50	34.3	—	32	40.5	54	60	HSJ60
20BE041	3	40	30	4	50	43.9	—	41	48	64	70	HSJ70
20BE052	3	50	40	4	50	55.7	—	52	61.5	82	90	HSJ90
20BE062	4	60	50	2	50	68	—	62	78	104	125	HSJ125
20BT099 ⁽³⁾	5	100	—	2	40	108.6	—	99	109	126	150	HSJ150
		—	75	2	40	84.5	—	77	116	138	150	HSJ150
20BT144 ⁽³⁾	6	150	—	2	50	158	—	144	158	216	250	HSJ250
		—	125	2	50	137.1	—	125	188	250	250	HSJ250

932 Volt DC Input Protection Devices (See [page 5](#) for Notes)

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp. (1)	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (2) (11)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BW052 ⁽³⁾	5	45	—	2	50 ⁽⁴⁾	58.2	—	52	57	78	100	170M3691
		—	37.5	2	50 ⁽⁴⁾	46.9	—	46	69	92	100	170M3691
20BW098 ⁽³⁾	5	90	—	2	50 ⁽⁴⁾	110.7	—	98	108	127	160	170M3693
		—	75	2	50 ⁽⁴⁾	92.3	—	82	123	140	160	170M3693
20BW142 ⁽³⁾	6	132	—	2	50 ⁽⁴⁾	162.2	—	142	156	213	250	170M3695
		—	110	2	40 ⁽⁴⁾	134.9	—	119	179	238	315	170M3696

- (1) Drive frames 0...4 temperature rating is for NEMA/UL Type Open. The adhesive top label must be removed to operate drive at this temperature. Frames 5 & 6 do not have a top label.
- (2) The power source to common bus inverters must be derived from AC voltages 600V or less, as defined in NFPA70; Art 430-18 (NEC). Battery supplies or MG sets are not included. The following devices were validated to break current of the derived power DC Bus.
Disconnects: Allen-Bradley Bulletin 1494, 30-400A; 194, 30-400A; or ABB OESA, 600 & 800A; OESL, all sizes.
Fuses: Bussmann Type JKS, all sizes; Type 170M, Case Sizes 1, 2 and 3, or Ferraz Shawmut Type HSJ, all sizes. For any other devices, please contact the factory.
- (3) Drives have dual current ratings; one for normal duty applications, and one for heavy duty applications. The drive may be operated at either rating.
- (4) UL Type 12/IP54 (flange mount) heatsink ambient temperature rating is 40 °C/ambient of unprotected drive portion (inside enclosure) is 55 °C. The ambient temperature for the UL Type 12/IP54 stand-alone drives is 40 °C.
- (5) Also applies to "P" voltage class.
- (6) Also applies to "J" voltage class.
- (7) Must remove top label and vent plate, drive enclosure rating will be IP00, NEMA/UL Type Open.
- (8) Two 630A Bussmann 170M6608 can also be used.
- (9) Two 700A Bussmann 170M6611 can also be used.
- (10) Bussmann or equivalent.
- (11) See Fuse Certification and Test Data in PowerFlex AC Drives in Common Bus Configurations Application Guidelines, publication [DRIVES-AT002](#), for fuse self-certification and test data for Bussmann 170M and JKS fuses recommended for the DC bus fusing.

AC Input Protection Devices

208 Volt AC Input Protection Devices (See [page 8](#) for Notes)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. ⁽¹¹⁾ °C	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Protector with Adjustable Current Range ⁽⁵⁾⁽⁶⁾			
		ND	HD	kHz		Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Max. ⁽⁸⁾	Max. ⁽⁸⁾	Available Catalog Numbers - 140... ⁽⁷⁾			Minimum Enclosure Volume (in. ³) ⁽¹⁴⁾
20BB2P2	0	0.5	0.33	4	50	1.9	0.7	2.5	2.8	3.8	3	6	3	10	15	3	M-C2E-B25	M-D8E-B25	—	7269
20BB4P2	0	1	0.75	4	50	3.7	1.3	4.8	5.6	7	6	10	6	17.5	15	7	M-C2E-B63	M-D8E-B63	—	7269
20BB6P8	1	2	1.5	4	50	6.8	2.4	7.8	10.4	13.8	10	15	10	30	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269
20BB9P6	1	3	2	4	50	9.5	3.4	11	12.1	17	12	20	12	40	40	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269
20BB015	1	5	3	4	50	15.7	5.7	17.5	19.3	26.3	20	35	20	70	70	30	M-C2E-C20	M-D8E-C20	M-F8E-C20	7269
20BB022	1	7.5	5	4	50	23	8.3	25.3	27.8	38	30	50	30	100	100	30	—	M-D8E-C25	M-F8E-C25	7269
20BB028	2	10	7.5	4	50	29.6	10.7	32.2	38	50.6	40	70	40	125	125	50	—	—	M-F8E-C32	7269
20BB042	3	15	10	4	50	44.5	16	48.3	53.1	72.5	60	100	60	175	175	70	—	—	M-F8E-C45	13630
20BB052	3	20	15	4	50	51.5	17.1	56	64	86	80	125	80	200	200	100	—	—	—	—
20BB070	4	25	20	4	50	72	25.9	78.2	93	124	90	175	90	300	300	100	—	—	—	—
20BB080	4	30	25	4	50	84.7	30.5	92	117	156	110	200	110	350	350	150	—	—	—	—
20BB104 ⁽¹²⁾	5	40	—	4	50	113	40.7	120	132	175	150	250	150	475	350	150	—	—	—	—
		—	30	4	50	84.7	30.5	92	138	175	125	200	125	350	300	150	—	—	—	—
20BB130 ⁽¹²⁾	5	50	—	4	50	141	44.1	130	143	175	175	275	175	500	375	250	—	—	—	—
		—	40	4	50	113	35.3	104	156	175	125	225	125	400	300	150	—	—	—	—
20BB154 ⁽¹²⁾	6	60	—	4	50	167	60.1	177	195	266	225	350	225	500	500	250	—	—	—	—
		—	50	4	50	141	50.9	150	225	300	200	300	200	500	450	250	—	—	—	—
20BB192 ⁽¹²⁾	6	75	—	4	50	208	75	221	243	308	300	450	300	600	600	400	—	—	—	—
		—	60	4	50	167	60.1	177	266	308	225	350	225	500	500	250	—	—	—	—
20BB260 ⁽¹²⁾	6	100	—	2	45	255	91.9	260	286	390	300	575	300	750	750	400	—	—	—	—
		—	75	2	50	199	71.7	205	305	410	225	450	225	600	600	400	—	—	—	—

240 Volt AC Input Protection Devices (See [page 8](#) for Notes)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. ⁽¹¹⁾ °C	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Protector with Adjustable Current Range ⁽⁵⁾⁽⁶⁾			
		ND	HD	kHz		Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Max. ⁽⁸⁾	Max. ⁽⁸⁾	Available Catalog Numbers - 140... ⁽⁷⁾			Minimum Enclosure Volume (in. ³) ⁽¹⁴⁾
20BB2P2	0	0.5	0.33	4	50	1.7	0.7	2.2	2.4	3.3	3	6	3	10	15	3	M-C2E-B25	M-D8E-B25	—	7269
20BB4P2	0	1	0.75	4	50	3.3	1.4	4.2	4.8	6.4	5	8	5	15	15	7	M-C2E-B63	M-D8E-B63	—	7269
20BB6P8	1	2	1.5	4	50	5.9	2.4	6.8	9	12	10	15	10	25	25	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269
20BB9P6	1	3	2	4	50	8.3	3.4	9.6	10.6	14.4	12	20	12	35	35	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269
20BB015	1	5	3	4	50	13.7	5.7	15.3	16.8	23	20	30	20	60	60	30	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269
20BB022	1	7.5	5	4	50	19.9	8.3	22	24.2	33	25	50	25	80	80	30	—	M-D8E-C25	M-F8E-C25	7269
20BB028	2	10	7.5	4	50	25.7	10.7	28	33	44	35	60	35	100	100	50	—	—	M-F8E-C32	7269
20BB042	3	15	10	4	50	38.5	16	42	46.2	63	50	90	50	150	150	50	—	—	M-F8E-C45	13630
20BB052	3	20	15	4	50	47.7	19.8	52	63	80	60	100	60	200	200	100	—	—	—	—
20BB070	4	25	20	4	50	64.2	26.7	70	78	105	90	150	90	275	275	100	—	—	—	—
20BB080	4	30	25	4	50	73.2	30.5	80	105	140	100	180	100	300	300	100	—	—	—	—
20BB104 ⁽¹²⁾	5	40	—	4	50	98	40.6	104	115	175	125	225	125	400	300	150	—	—	—	—
		—	30	4	50	73	30.5	80	120	160	100	175	100	300	300	100	—	—	—	—
20BB130 ⁽¹²⁾	5	50	—	4	50	122	50.7	130	143	175	175	275	175	500	375	250	—	—	—	—
		—	40	4	50	98	40.6	104	156	175	125	225	125	400	300	150	—	—	—	—
20BB154 ⁽¹²⁾	6	60	—	4	50	145	60.1	154	169	231	200	300	200	600	450	250	—	—	—	—
		—	50	4	50	122	50.7	130	195	260	175	275	175	500	375	250	—	—	—	—
20BB192 ⁽¹²⁾	6	75	—	4	50	180	74.9	192	211	288	225	400	225	600	575	250	—	—	—	—
		—	60	4	50	145	60.1	154	231	308	200	300	200	600	450	250	—	—	—	—
20BB260 ⁽¹²⁾	6	100	—	2	45	233	96.7	260	286	390	300	575	300	750	750	300	—	—	—	—
		—	75	2	50	169	70.1	205	305	410	225	450	225	600	600	250	—	—	—	—

400 Volt AC Input Protection Devices (See [page 8](#) for Notes)

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp.	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Protector with Adjustable Current Range ⁽⁵⁾⁽⁶⁾			
		ND	HD	kHz	° C	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Max. ⁽⁸⁾	Max. ⁽⁸⁾	Available Catalog Numbers - 140... ⁽⁷⁾		Minimum Enclosure Volume (in. ³) ⁽¹⁴⁾	
20BC1P3	0	0.37	0.25	4	50 ⁽¹¹⁾	1.1	0.77	1.3	1.4	1.9	3	3	3	6	15	3	M-C2E-B16	—	—	7269
20BC2P1	0	0.75	0.55	4	50 ⁽¹¹⁾	1.8	1.3	2.1	2.4	3.2	3	6	3	8	15	3	M-C2E-B25	M-D8E-B25	—	7269
20BC3P5	0	1.5	0.75	4	50 ⁽¹¹⁾	3.2	2.2	3.5	4.5	6	6	7	6	12	15	7	M-C2E-B40	M-D8E-B40	—	7269
20BC5P0	0	2.2	1.5	4	50 ⁽¹¹⁾	4.6	3.2	5	5.5	7.5	6	10	6	20	20	7	M-C2E-B63	M-D8E-B63	—	7269
20BC8P7	0	4	2.2	4	50 ⁽¹¹⁾	7.9	5.5	8.7	9.9	13.2	15	17.5	15	30	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269
20BC011	0	5.5	4	4	50 ⁽¹¹⁾	10.8	7.5	11.5	13	17.4	15	25	15	45	45	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269
20BC015	1	7.5	5.5	4	50 ⁽¹¹⁾	14.4	10	15.4	17.2	23.1	20	30	20	60	60	20	M-C2E-C20	M-D8E-C20	M-F8E-C20	7269
20BC022	1	11	7.5	4	50 ⁽¹¹⁾	20.6	14.3	22	24.2	33	30	45	30	80	80	30	—	M-D8E-C25	M-F8E-C25	7269
20BC030	2	15	11	4	50 ⁽¹¹⁾	28.4	19.7	30	33	45	35	60	35	120	120	50	—	—	M-F8E-C32	7269
20BC037	2	18.5	15	4	50 ⁽¹¹⁾	35	24.3	37	45	60	45	80	45	125	125	50	—	—	M-F8E-C45	7269
20BC043	3	22	18.5	4	50 ⁽¹¹⁾	40.7	28.2	43	56	74	60	90	60	150	150	60	—	—	—	—
20BC056	3	30	22	4	50 ⁽¹¹⁾	53	36.7	56	64	86	70	125	70	200	200	100	—	—	—	—
20BC072	3	37	30	4	50 ⁽¹⁰⁾⁽¹¹⁾	68.9	47.8	72	84	112	90	150	90	250	250	100	—	—	—	—
20BC085 ⁽¹²⁾	4	45	—	4	45 ⁽¹¹⁾	81.4	56.4	85	94	128	110	200	110	300	300	150	—	—	—	—
		—	37	4	45 ⁽¹¹⁾	68.9	47.8	72	108	144	90	175	90	275	300	100	—	—	—	—
20BC105 ⁽¹²⁾	5	55	—	4	50 ⁽⁹⁾	100.5	69.6	105	116	158	125	225	125	400	300	150	—	—	—	—
		—	45	4	50 ⁽⁹⁾	81.4	56.4	85	128	170	110	175	110	300	300	150	—	—	—	—
20BC125 ⁽¹²⁾	5	55	—	4	50 ⁽⁹⁾	121.1	83.9	125	138	163	150	275	150	500	375	250	—	—	—	—
		—	45	4	50 ⁽⁹⁾	91.9	63.7	96	144	168	125	200	125	375	375	150	—	—	—	—
20BC140 ⁽¹²⁾	5	75	—	4	40 ⁽⁹⁾	136	93.9	140	154	190	200	300	200	400	400	250	—	—	—	—
		—	55	4	40 ⁽⁹⁾	101	69.6	105	157	190	150	225	150	300	300	150	—	—	—	—
20BC170 ⁽¹²⁾	6	90	—	4	50 ⁽⁹⁾	164	126	170	187	255	250	375	250	600	500	250	—	—	—	—
		—	75	4	50 ⁽⁹⁾	136	103	140	210	280	200	300	200	550	400	250	—	—	—	—
20BC205 ⁽¹²⁾	6	110	—	4	40 ⁽⁹⁾	199	148	205	220	289	250	450	250	600	600	400	—	—	—	—
		—	90	4	40 ⁽⁹⁾	164	126	170	255	313	250	375	250	600	500	250	—	—	—	—
20BC260 ⁽¹²⁾	6	132	—	2	45 ⁽⁹⁾	255	177	260	286	390	350	550	350	750	750	400	—	—	—	—
		—	110	2	50 ⁽⁹⁾	199	138	205	308	410	250	450	250	600	600	400	—	—	—	—

480 Volt AC Input Protection Devices (See [page 8](#) for Notes)

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp.	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Protector with Adjustable Current Range ⁽⁵⁾⁽⁶⁾			
		ND	HD	kHz	° C	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Max. ⁽⁸⁾	Max. ⁽⁸⁾	Available Catalog Numbers - 140... ⁽⁷⁾		Minimum Enclosure Volume (in. ³) ⁽¹⁴⁾	
20BD1P1	0	0.5	0.33	4	50 ⁽¹¹⁾	0.9	0.7	1.1	1.2	1.6	3	3	3	6	15	3	M-C2E-B16	—	—	7269
20BD2P1	0	1	0.75	4	50 ⁽¹¹⁾	1.6	1.4	2.1	2.4	3.2	3	6	3	8	15	3	M-C2E-B25	—	—	7269
20BD3P4	0	2	1.5	4	50 ⁽¹¹⁾	2.6	2.2	3.4	4.5	6	4	8	4	12	15	7	M-C2E-B40	M-D8E-B40	—	7269
20BD5P0	0	3	2	4	50 ⁽¹¹⁾	3.9	3.2	5	5.5	7.5	6	10	6	20	20	7	M-C2E-B63	M-D8E-B63	—	7269
20BD8P0	0	5	3	4	50 ⁽¹¹⁾	6.9	5.7	8	8.8	12	10	15	10	30	30	15	M-C2E-C10	M-D8E-C10	M-F8E-C10	7269
20BD011	0	7.5	5	4	50 ⁽¹¹⁾	9.5	7.9	11	12.1	16.5	15	20	15	40	40	15	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269
20BD014	1	10	7.5	4	50 ⁽¹¹⁾	12.5	10.4	14	16.5	22	17.5	30	17.5	50	50	20	M-C2E-C16	M-D8E-C16	M-F8E-C16	7269
20BD022	1	15	10	4	50 ⁽¹¹⁾	19.9	16.6	22	24.2	33	25	50	25	80	80	30	—	M-D8E-C25	M-F8E-C25	7269
20BD027	2	20	15	4	50 ⁽¹¹⁾	24.8	20.6	27	33	44	35	60	35	100	100	50	—	—	M-F8E-C32	7269
20BD034	2	25	20	4	50 ⁽¹¹⁾	31.2	25.9	34	40.5	54	40	70	40	125	125	50	—	—	M-F8E-C45	7269
20BD040	3	30	25	4	50 ⁽¹¹⁾	36.7	30.5	40	51	68	50	90	50	150	150	50	—	—	M-F8E-C45	13630
20BD052	3	40	30	4	50 ⁽¹¹⁾	47.7	39.7	52	60	80	60	110	60	200	200	70	—	—	—	—
20BD065	3	50	40	4	50 ⁽¹¹⁾	59.6	49.6	65	78	104	80	125	80	250	250	100	—	—	—	—
20BD077 ⁽¹²⁾	4	60	—	4	50 ⁽¹¹⁾	72.3	60.1	77	85	116	100	170	100	300	300	100	—	—	—	—
		—	50	4	50 ⁽¹¹⁾	59.6	49.6	65	98	130	80	125	80	250	250	100	—	—	—	—
20BD096 ⁽¹²⁾	5	75	—	4	50 ⁽⁹⁾	90.1	74.9	96	106	144	125	200	125	350	350	125	—	—	—	—
		—	60	4	50 ⁽⁹⁾	72.3	60.1	77	116	154	100	170	100	300	300	100	—	—	—	—
20BD125 ⁽¹²⁾	5	100	—	4	50 ⁽⁹⁾	117	97.6	125	138	163	150	250	150	500	375	150	—	—	—	—
		—	75	4	50 ⁽⁹⁾	90.1	74.9	96	144	168	125	200	125	350	350	125	—	—	—	—
20BD156 ⁽¹²⁾	6	125	—	4	50 ⁽⁹⁾	147	122	156	172	234	200	350	200	600	450	250	—	—	—	—
		—	100	4	50 ⁽⁹⁾	131	109	125	188	250	175	250	175	500	375	250	—	—	—	—
20BD180 ⁽¹²⁾	6	150	—	4	50 ⁽⁹⁾	169	141	180	198	270	225	400	225	600	500	250	—	—	—	—
		—	125	4	50 ⁽⁹⁾	147	122	156	234	312	200	350	200	600	450	250	—	—	—	—
20BD248 ⁽¹²⁾	6	200	—	2	45 ⁽⁹⁾	233	194	248	273	372	300	550	300	700	700	400	—	—	—	—
		—	150	2	50 ⁽⁹⁾	169	141	180	270	360	225	400	225	600	500	250	—	—	—	—

600 Volt AC Input Protection Devices (See [page 8](#) for Notes) ⁽¹³⁾

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp. ⁽¹¹⁾ ° C	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾	140M Motor Protector with Adjustable Current Range ⁽⁵⁾⁽⁶⁾		
		ND	HD	kHz		Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Max. ⁽⁸⁾	Max. ⁽⁸⁾	Available Catalog Numbers - 140... ⁽⁷⁾		Minimum Enclosure Volume (in. ³) ⁽¹⁴⁾
20BE1P7	0	1	0.5	4	50	1.3	1.4	1.7	2	2.6	2	4	2	6	15	3	M-C2E-B16	—	7269
20BE2P7	0	2	1	4	50	2.1	2.1	2.7	3.6	4.8	3	6	3	10	15	3	M-C2E-B25	—	7269
20BE3P9	0	3	2	4	50	3	3.1	3.9	4.3	5.9	6	9	6	15	15	7	M-C2E-B40	M-D8E-B40	7269
20BE6P1	0	5	3	4	50	5.3	5.5	6.1	6.7	9.2	9	12	9	20	20	15	—	M-D8E-B63	7269
20BE9P0	0	7.5	5	4	50	7.8	8.1	9	9.9	13.5	10	20	10	35	30	15	—	M-D8E-C10	7269
20BE011	1	10	7.5	4	50	9.9	10.2	11	13.5	18	15	25	15	40	40	15	—	M-D8E-C10	7269
20BE017	1	15	10	4	50	15.4	16	17	18.7	25.5	20	40	20	60	50	20	—	M-D8E-C16	7269
20BE022	2	20	15	4	50	20.2	21	22	25.5	34	30	50	30	80	80	30	—	M-F8E-C25	7269
20BE027	2	25	20	4	50	24.8	25.7	27	33	44	35	60	35	100	100	50	—	M-F8E-C25	7269
20BE032	3	30	25	4	50	29.4	30.5	32	40.5	54	40	70	40	125	125	50	—	M-F8E-C32	13630
20BE041	3	40	30	4	50	37.6	39.1	41	48	64	50	90	50	150	150	100	—	—	—
20BE052	3	50	40	4	50	47.7	49.6	52	61.5	82	60	110	60	200	200	100	—	—	—
20BE062	4	60	50	2	50	58.2	60.5	62	78	104	80	125	80	225	225	100	—	—	—
20BE077 ⁽¹²⁾	5	75	—	2	50 ⁽⁹⁾	72.3	75.1	77	85	116	90	150	90	300	300	100	—	—	—
		—	60	2	50 ⁽⁹⁾	58.2	60.5	63	94	126	90	125	90	250	250	100	—	—	—
20BE099 ⁽¹²⁾	5	100	—	2	40 ⁽⁹⁾	92.9	96.6	99	109	126	125	200	125	375	375	150	—	—	—
		—	75	2	40 ⁽⁹⁾	72.3	75.1	77	116	138	100	175	100	300	300	100	—	—	—
20BE125 ⁽¹²⁾	6	125	—	2	50 ⁽⁹⁾	117	122	125	138	188	150	250	150	375	375	250	—	—	—
		—	100	2	50 ⁽⁹⁾	93	96.6	99	149	198	125	200	125	375	375	150	—	—	—
20BE144 ⁽¹²⁾	6	150	—	2	50 ⁽⁹⁾	135	141	144	158	216	175	300	175	400	400	250	—	—	—
		—	125	2	50 ⁽⁹⁾	117	122	125	188	250	150	275	150	375	375	250	—	—	—

690 Volt AC Input Protection Devices (See [page 8](#) for Notes) ⁽¹³⁾

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp. ⁽¹¹⁾ ° C	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker ⁽³⁾	Motor Circuit Protector ⁽⁴⁾
		ND	HD	kHz		Amps	kVA	Cont.	1 Min.	3 Sec.	Min. ⁽¹⁾	Max. ⁽²⁾	Min. ⁽¹⁾	Max. ⁽²⁾	Max. ⁽⁸⁾	Max. ⁽⁸⁾
20BF052 ⁽¹²⁾	5	45	—	4	50 ⁽⁹⁾	46.9	56.1	52	57	78	60	110	60	175	175	—
		—	37.5	4	50 ⁽⁹⁾	40.1	48	46	69	92	50	90	50	150	150	—
20BF060 ⁽¹²⁾	5	55	—	4	50 ⁽⁹⁾	57.7	68.9	60	66	90	80	125	80	225	225	—
		—	45	4	50 ⁽⁹⁾	46.9	56.1	52	78	104	60	110	60	175	175	—
20BF082 ⁽¹²⁾	5	75	—	2	50 ⁽⁹⁾	79	94.4	82	90	123	100	200	100	375	375	—
		—	55	2	50 ⁽⁹⁾	57.7	68.9	60	90	120	80	125	80	225	225	—
20BF098 ⁽¹²⁾	5	90	—	2	40 ⁽⁹⁾	94.7	113	98	108	127	125	200	125	375	375	—
		—	75	2	40 ⁽⁹⁾	79	94.4	82	123	140	100	200	100	375	375	—
20BF119 ⁽¹²⁾	6	110	—	2	50 ⁽⁹⁾	115	137	119	131	179	150	250	150	400	—	—
		—	90	2	50 ⁽⁹⁾	94.7	113	98	147	196	125	200	125	375	—	—
20BF142 ⁽¹²⁾	6	132	—	2	50 ⁽⁹⁾	138	165	142	156	213	175	300	175	450	—	—
		—	110	2	50 ⁽⁹⁾	115	137	119	179	238	150	250	150	400	—	—

Notes:

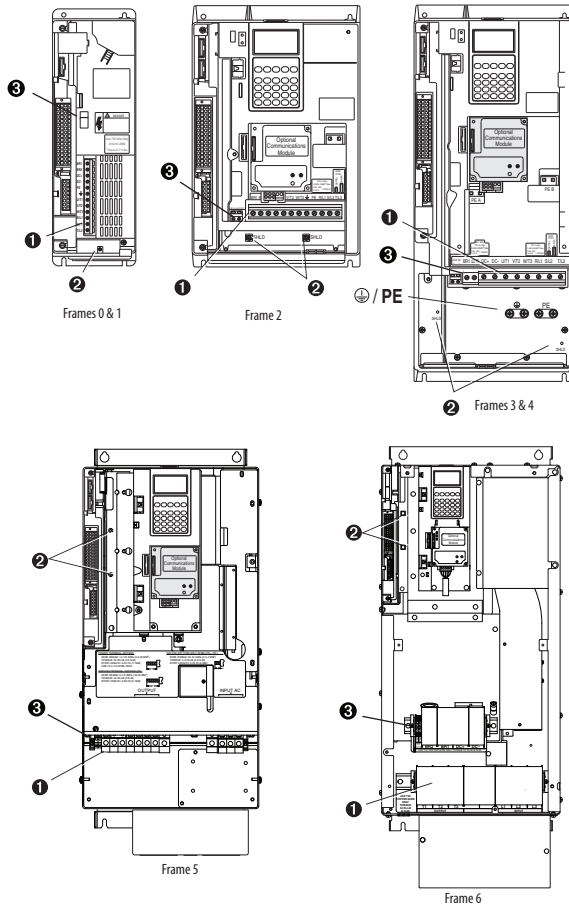
- ⁽¹⁾ Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
- ⁽²⁾ Maximum protection device size is the highest rated device that supplies drive protection. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.
- ⁽³⁾ Circuit Breaker - inverse time breaker. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.
- ⁽⁴⁾ Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor FLA. Ratings shown are maximum.
- ⁽⁵⁾ Bulletin 140M with adjustable current range should have the current trip set to the minimum range that the device will not trip.
- ⁽⁶⁾ Manual Self-Protected (Type E) Combination Motor Controller, UL listed for 208 Wye or Delta, 240 Wye or Delta, 480Y/277 or 600Y/347. Not UL listed for use on 480V or 600V Delta/Delta, corner ground, or high-resistance ground systems.
- ⁽⁷⁾ The AIC ratings of the Bulletin 140M Motor Protector Circuit Breakers may vary. See [Bulletin 140M Motor Protection Circuit Breakers Application Ratings](#).
- ⁽⁸⁾ Maximum allowable rating by US NEC. Exact size must be chosen for each installation.
- ⁽⁹⁾ UL Type 12/IP54 (flange mount) heat sink ambient temperature rating is 40° C/ambient of unprotected drive portion (inside enclosure) is 55° C. The ambient temperature for the UL Type 12/IP54 stand-alone drives is 40° C.
- ⁽¹⁰⁾ Must remove top label and vent plate, drive enclosure rating will be IP00, NEMA/UL Type Open.
- ⁽¹¹⁾ Drive frames 0...4 temperature rating is for NEMA/UL Type Open. The adhesive top label must be removed to operate drive at this temperature. Frames 5 & 6 do not have a top label.
- ⁽¹²⁾ Drives have dual current ratings; one for normal duty applications, and one for heavy duty applications. The drive may be operated at either rating.
- ⁽¹³⁾ Note: 600V class drives below 77 Amps (Frames 0...4) are declared to meet the Low Voltage Directive. It is the responsibility of the user to determine compliance to the EMC directive.
- ⁽¹⁴⁾ When using a Manual Self-Protected (Type E) Combination Motor Controller, the drive must be installed in a ventilated or non-ventilated enclosure with the minimum volume specified in this column. Application specific thermal considerations may require a larger enclosure.

Wire Recommendations

Type	Wire Type(s)	Description
Power (1)(2)	Standard 600V, 90 °C (194 °F) XHHW2/RHW-2 Anixter B209500-B209507, Belden 29501-29507, or equivalent	<ul style="list-style-type: none"> Four tinned copper conductors with XLPE insulation. Copper braid/aluminum foil combination shield and tinned copper drain wire. PVC jacket.

- (1) Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).
 (2) The use of shielded wire for AC input power may not be necessary but is always recommended.


Terminal Block Locations and Specifications

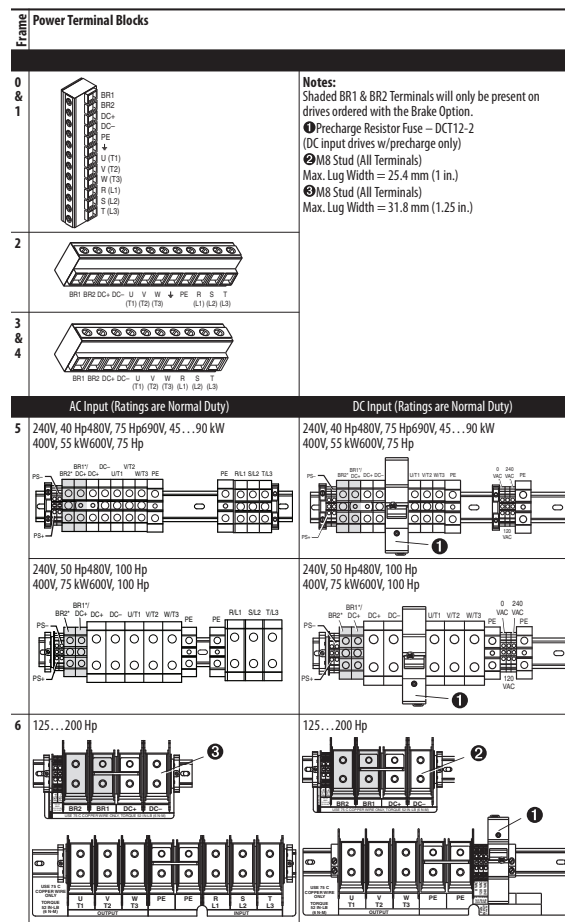


No.	Name	Frame	Description	Wire Size Range ⁽¹⁾		Torque	
				Maximum	Minimum	Maximum	Recommended
1	Power Terminal Block	0 & 1	Input power and motor connections	4.0 mm ² (12 AWG)	0.5 mm ² (22 AWG)	1.7 N·m (15 lb·in)	0.8 N·m (7 lb·in)
		2	Input power and motor connections	10.0 mm ² (8 AWG)	0.8 mm ² (18 AWG)	1.7 N·m (15 lb·in)	1.4 N·m (12 lb·in)
		3	Input power and motor connections	25.0 mm ² (3 AWG)	2.5 mm ² (14 AWG)	3.6 N·m (32 lb·in)	1.8 N·m (16 lb·in)
			BR1, 2 terminals	10.0 mm ² (8 AWG)	0.8 mm ² (18 AWG)	1.7 N·m (15 lb·in)	1.4 N·m (12 lb·in)
		4	Input power and motor connections	35.0 mm ² (1 AWG)	10.0 mm ² (8 AWG)	4.0 N·m (35 lb·in)	4.0 N·m (35 lb·in)
		5 75 Hp, 480V 100 Hp, 600V	Input power, BR1, 2, DC+, DC-, PE and motor connections	50.0 mm ² (1/0 AWG)	4.0 mm ² (12 AWG)	See Note ⁽²⁾	
		5 100 Hp	Input power, DC+, DC- and motor	70.0 mm ² (2/0 AWG)	10.0 mm ² (8 AWG)		
2	SHLD Terminal	0...6	Terminating point for wiring shields	—	—	1.6 N·m (14 lb·in)	1.6 N·m (14 lb·in)
3	AUX Terminal Block	0...4	Auxiliary Control Voltage PS+, PS- ⁽⁴⁾	1.5 mm ² (16 AWG)	0.2 mm ² (24 AWG)	—	—
		5...6		4.0 mm ² (12 AWG)	0.5 mm ² (22 AWG)	0.6 N·m (5.3 lb·in)	0.6 N·m (5.3 lb·in)

- (1) Maximum/minimum wire sizes that the terminal block will accept - these are not recommendations.
 (2) Refer to the terminal block label inside the drive.
 (3) Two wires connected in parallel to any of these terminals using two lugs may be required.
 (4) External control power: UL Installation-300V DC, ±10%, Non UL Installation-270...600V DC, ±10% 0...3 Frame - 40 W, 165 mA, 5 Frame - 80 W, 90 mA. Refer to the PowerFlex 700 Vector Control User Manual (v4.001 & up), publication 20B-UM002 for further information.

Terminal Block Descriptions

Terminal	Description	Notes
BR1 BR2	DC Brake (+) DC Brake (-)	DB Resistor Connection - Important: Only one DB resistor can be used with Frames 0...3. Connecting an internal & external resistor could cause damage. Twisted pair wiring must be used from these terminals to the resistor. Wiring must be routed separately from other cabling.
DC+ DC-	DC Bus (+) DC Bus (-)	DC Input/Brake Connections (chopper and resistor).
PE	PE Ground	Refer to Terminal Block Locations and Specifications on page 9 for location on Frame 3 and Frame 4 drives
PS+ PS-	AUX (+) AUX (-)	Auxiliary Control Voltage
	Motor Ground	Refer to Terminal Block Locations and Specifications on page 9 for location on Frame 3 and Frame 4 drives
U V W	U (T1) V (T2) W (T3)	To Motor/Load
R S T	R (L1) S (L2) T (L3)	AC Line Input Power Three-Phase = R, S & T Single-Phase = R & S Only (refer to User Manual for details)



Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://www.rockwellautomation.com/support/>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://www.rockwellautomation.com/support/>.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in the installation instructions. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/support/americas/phone_en.html , or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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